1.(Previously presented) The layered organic-inorganic/oxide material as claimed in Claim 53 wherein the one or more layers of the metal oxide comprise one or more atomic planes of corner-shared MO_6 octahedra, where M is a metal.

2.(Previously presented) The material as claimed in claim 1 wherein the metal M is W, V or Mo, or a combination of these.

3.(Previously presented) The material as claimed in claim 2 wherein a high valency such as metal selected from the group consisting of Ti, Nb, Ta, Ru and Re is used in partial combination with M.

4.(Previously presented) The material as claimed in claim 2 having a general formula $X.M_mO_{3m+1}$ wherein M is the metal, and X is an organic cation and m=1, 2, or 3.

5.(Previously presented) The material as claimed in claim 4 wherein the organic cation is bidentate.

6.(Previously presented) The material as claimed in claim 5 wherein the configuration of organic layer relative to the inorganic layer is eclipsed.

7.(Currently amended) The material as claimed in claim 5 wherein the organic cation is a diammonium cation, the material is of composition $NH_3.A.NH_3.M_mO_{3m+1}$, wherein "A" is an organic group.

8.(Currently amended) The material as claimed in claim 7 wherein m=1, such

that ~~each inorganic oxide atomic plane alternates~~ there are a plurality of inorganic oxide atomic planes each alternating with an organic layer.

9.(Previously presented) The material as claimed in claim 7 wherein m=2, the composition is $NH_3.A.NH_3.M_2O_7$ and wherein the inorganic oxide exists as a double atomic plane layer of corner shared MO_6 octahedra, such that the material has the stacking structure --A--O--MO_2--O--MO_2--O--A.

10.(Currently amended) The material as claimed in claim 8 wherein the organic cation is an aliphatic diammonium cation, and ~~Z = $(CH)_n$, n=1, 2,.....~~ A = $(CH)_n$, n=1,2,.....

11.(Currently amended) The material as claimed in claim 10 wherein, on the organic cation, A includes terminal alkane units and the ammonium cation groups are positioned on the terminal alkane units of A.

12.(Previously presented) The material as claimed in claim 11 having the chemical formula $NH_3(CH_2)_nNH_3MO_4$.

13.(Previously presented) The material as claimed in claim 12 with n=2.

14.(Previously presented) The material as claimed in claim 12 with n=6.

15.(Previously presented) The material as claimed in claim 12 with n=12.

16.(Previously presented) The material as claimed in claim ~~8~~ 4 wherein the organic

cation is an aromatic diammonium cation.

17.(Currently amended) The material as claimed in claim 16 wherein ~~A=C_6H_4 and~~ the organic cation is ~~$NH_3C_6H_4NH_3$~~ α-$\omega NH_3C_6H_4NH_3$.

18.(Previously presented) The material as claimed in claim 16 wherein the organic cation comprises an aromatic ring with two aliphatic side chains of equal or unequal length each side chain terminated by an ammonium ion, the organic cation having the general formula $NH_3(CH_2)_pC_6H_4(CH_2)_qNH_3$, where "p" and "q" are each independently selected from 0, 1, 2, or 3.

19.(Previously presented) The material as claimed in claim 17 in which there are two or more aromatic rings at least two of which are adjacent and where the adjacent aromatic rings are crosslinked to form an organic polymer layer.

20.(Previously presented) The material as claimed in claim 19 in which the organic polymer layer is conducting.

21.(Previously presented) The material as claimed in claim 2 having a general formula $X'_2.M_mO_{3m+1}$ wherein M is the metal, and X' is an organic cation and m=1, 2, 3.

22.(Previously presented) The material as claimed in claim 21 wherein the organic cation is monodentate.

23.(Previously presented) The material as claimed in claim 21 wherein the

configuration of organic layer relative to the inorganic layer is staggered.

24.(Currently amended) The material as claimed in claim 23 wherein both organic cations are monoammonium cations and the material is of composition $(NH_3.A')_2.M._mO_{3m+1}$ wherein A′ is an organic group.

25.(Previously presented) The material as claimed in claim 24 wherein m=1, such that each inorganic oxide atomic layer alternates with an organic layer.

26.(Previously presented) The material as claimed in claim 24 wherein m=2, the composition is $(NH_3.A')_2.M_2O_7$ and wherein the organic oxide exists as a double atomic plane layer having approximately the ZWO_3 perovskite structure with the Z sites vacant such that the material has the stacking structure $NH_3.A'--MO_2--O--MO_2--A'.NH_3$.

27.(Previously presented) The material as claimed in claim 25 or 26 wherein one or both organic cation is an aliphatic ammonium cation, and $A'=(CH)_n$, n=1, 2, ...

28.(Previously presented) The material as claimed in claim 25 wherein one or both organic cation is an aromatic ammonium cation.

29.(Previously presented) The material as claimed in claim 28, wherein the aromatic ammonium cation has an aromatic ring and the aromatic ring has a side chain which is aliphatic and terminated by an ammonium ion, having the formula $(C_6H_5.(CH_2)_mNH_3)_2MO_4$ where m=0, 1, 2, 3, . . . ,

30.(Previously presented) The material as claimed in claim 28 in which the

aromatic ammonium cation has two or more aromatic rings, at least tow of which are adjacent, and wherein the adjacent aromatic rings are crosslinked to form an organic polymer layer.

31.(Previously presented) The material as claimed in claim 30 in which the organic polymer layer is conducting.

32.(Previously presented) The material as claimed in claim 1 wherein dopants are introduced into the structure.

33.(Currently amended) The material as claimed in claim 32 wherein the dopant is selected from one or more of an alkali cation, a methyl ammonium cation ~~(the cations replacing ammonium groups)~~ the cations replacing ammonium groups, field-effect injected electrons or field-effect injected electron holes.

34.(Previously presented) The material as claimed in claim 32 wherein the dopant is present in the inorganic oxide layers and the doping state of the oxide is adjusted such that the oxide exhibits superconductivity above the temperature of 40 K.

35.(Previously presented) The material as claimed in claim 32 where the doping state of the oxide is adjusted such that the oxide exhibits superconductivity above the temperature of 90 K.

36.(Previously presented) The material of claim 1 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

37.(Previously presented) The organic/inorganic oxide material of claim 1 in which the oxide layer comprising MO_4, M_2O_7 or M_mO_{3m+1} is wholly replaced by any of the following oxide layers CuO_2, NiO_2, CoO_2, CuO_2CaCuO_2, $Ca_{m-1}Cu_mO_{2m}$, m=1, 2, 3,..., NiO_2CaNiO_2, $Ca_{m-1}Ni_mO_{2m}$, m=1, 2, 3,..., square pyramidal MnO_3, square pyramidal RuO_3, octahedral RuO_4, O-Mn_2-Y-MnO_2-O, O-MnO_2-Ca-MnO_2-O, O-RuO_2-YRuO_2-O, or O-RuO_2-Ca-RuO_2-O.

38.(Previously presented) The layered organic-inorganic oxide material as claimed in Claim 53 wherein the one or more layers of metal oxide comprise one or more atomic planes of metal oxide having substantially the ZMO_3 perovskite structure (M=metal) with the Z sites vacant, and wherein the metals form divalent cations and are coordinated into a corner-shared square-planar structure, or the metals form tetravalent cations and are coordinated into a corner-shared square-pyramid structure.

39. (Previously presented) The material as claimed in claim 38 wherein the metal, M, is Cu, Ni, Ru, Mn, or a combination of these.

40.(Currently amended) The material as claimed in claim 39 wherein higher order structures are formed with two or more oxide layers each separated by an alkali earth ion which is situated in the perovskite ~~A-site~~ Z-site.

41.(Previously presented) The material as claimed in claim 40 wherein the alkali earth ion is calcium.

42.(Currently amended) The material as claimed in claim 41 having the general formula of one of: NH_3.A.NH_3CuO_2, $(A.NH_3)_2CuO_2$, NH_3.A.$NH_3Ca_{m-1}Cu_mO_{2m}$, m=1, 2,

3, . . . , $(A.NH_3)_2Ca_{m-1}Cu_mO_{2m}$, m=1, 2, 3, . . . , $NH_3.A.NH_3NiO_2$, $(A.NH_3)_2NiO_2$, $NH_3.A.NH_3Ca_{m-1}$ Ni_mO_{2m}, m=1, 2, 3, . . . , $(A.NH_3)_2Ca_{m-1}Ni_mO_{2m}$, m=1, 2, 3, . . . , and $NH_3.A.NH_3MnO_3$, $(A.NH_3)_2MnO_3$, $NH_3.A.NH_3Ca_{m-1}Mn_mO_{2m+2}$, m=1, 2, 3, . . . , $(A.NH_3)_2Ca_{m-1}Mn_mO_{2m+2}$, m=1, 2, 3, . . . , $NH_3.A.NH_3RuO_3$, $(A.NH_3)_2RuO_3$, $NH_3.A.NH_3Ca_{m-1}Ru_mO_{2m+2}$, m=1, 2, 3, . . . , $(A.NH_3)_2Ca_{m-1}Ru_mO_{2m+2}$, m=1, 2, 3, . . . , wherein "A" is an organic group.

43.(Previously presented) The material as claimed in any one of claims 38 to 42 wherein dopants are introduced into the structure.

44.(Currently amended) The material as claimed in claim 43 wherein the dopant is selected from one or more of an alkali cation, a methyl ammonium cation ~~(the cations replacing ammonium groups)~~ the cations replacing ammonium groups, field-effect injected electrons or field-effect injected electron holes.

45.(Previously presented) The material as claimed in claim 44 wherein the dopant is present in the inorganic oxide layers and the doping state of the oxide is adjusted such that the oxide exhibits superconductivity above the temperature of 40 K.

46.(Previously presented) The material as claimed in claim 44 where the doping state of the oxide is adjusted such that the oxide exhibits superconductivity above the temperature of 90 K.

47.(Previously presented) The material as claimed in claim 38 in which M is partially or fully substituted by a magnetic transition metal ion so as to display

magnetically ordered states.

48.(Previously presented) A method of preparing the layered inorganic-organic material as claimed in Claim 53 which comprises the step of contacting a source of metal and/or oxide with a source of the organic molecules such that a layer structure substantially self assembles.

49.(Currently amended) The method as claimed in claim 48 wherein the material is of the general structure $NH_3.A.NH_3.M_mO_{3m+1}$, wherein A is an organic group and the material is prepared either: by reaction of a diaminoalkane with tungstic acid (when the metal is W) or molybdic acid (when the metal is Mo), ~~or~~ by dissolution of tungstic acid (when the metal is W) or molybdic acid (when the metal is Mo) in an ammonia solution, or by reaction of W or Mo metal with hydrogen peroxide to form a tungstate or molybdate complex as a precursor for reaction with the ammonia solution.

50.(Currently amended) A layered inorganic-organic material of the general structure $NH_3.A.NH_3.M_mO_{3m+1}$ prepared substantially according to the method of claim 49.

51. (Canceled)

52.(Canceled)

53.(Previously presented) A layered organic-inorganic/oxide material comprising one or more layers of a metal oxide and one or more layers of organic molecules, wherein the metal-oxide layers alternate with one or more organic layers alternate to

form a periodic planar structure.

54.(Previously presented) A material as claimed in claim 31 wherein dopants are introduced into the structure.

55.(Previously presented) A material as claimed in claim 31 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

56.(Previously presented) A material as claimed in claim 32 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

57.(Previously presented) A material as claimed in claim 33 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

58.(Previously presented) A material as claimed in claim 34 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

59.(Previously presented) A material as claimed in claim 35 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

60.(Previously presented) An organic/inorganic oxide material of claim 31 in which

the oxide layer comprising MO_4, M_2O_7 or M_mO_{3m+1} is wholly replaced by any of the following oxide layers CuO_2, NiO_2, CoO_2, CuO_2CaCuO_2, $Ca_{m-1}Cu_mO_{2m}$, m=1, 2, 3,..., NiO_2CaNiO_2, $Ca_{m-1}Ni_mO_{2m}$, m=1, 2, 3,..., square pyramidal MnO_3, square pyramidal RuO_3, octahedral RuO_4, O-Mn_2-Y-MnO_2-O, O-MnO_2-Ca-MnO_2-O, O-RuO_2-YRuO_2-O, or O-RuO_2-Ca-RuO_2-O.

61.(Previously presented) An organic/inorganic oxide material of claim 32 in which the oxide layer comprising MO_4, M_2O_7 or M_mO_{3m+1} is wholly replaced by any of the following oxide layers CuO_2, NiO_2, CoO_2, CuO_2CaCuO_2, $Ca_{m-1}Cu_mO_{2m}$, m=1, 2, 3,..., NiO_2CaNiO_2, $Ca_{m-1}Ni_mO_{2m}$, m=1, 2, 3,..., square pyramidal MnO_3, square pyramidal RuO_3, octahedral RuO_4, O-Mn_2-Y-MnO_2-O, O-MnO_2-Ca-MnO_2-O, O-RuO_2-YRuO_2-O, or O-RuO_2-Ca-RuO_2-O.

62.(Previously presented) A material as claimed in claim 39 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

63.(Previously presented) A material as claimed in claim 40 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

64.(Previously presented) A material as claimed in claim 41 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

65.(Previously presented) A material as claimed in claim 42 in which M is partially

or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

66.(Previously presented) A material as claimed in claim 43 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

67.(Previously presented) A material as claimed in claim 44 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

68.(Previously presented) A material as claimed in claim 45 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

69.(Previously presented) A material as claimed in claim 46 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

70.(Previously presented) The material as claimed in claim 16 wherein the aromatic diammonium cation has a string of one or more aromatic moieties of phenylene.

71.(Previously presented) The material as claimed in claim 28 wherein the aromatic diammonium cation has a string of one or more aromatic moieties of phenylene.